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Ministry
of Justice

The Justification of Practices Involving Ionising Radiation Regulations 2004

Determination on the application by the Home Office as to whether the use of ionising radiation imaging for age assessment can be justified as a new class or type of practice.

Summary

An application was made by the Home Office (the applicants) on 16 June 2022 under Regulation 9 of the Justification of Practices Involving Ionising Radiation Regulations 2004 (JoPIIRR) for a justification decision in respect of a new class or type of practice for the use of ionising radiation imaging (X-rays) for age assessment purposes on age-disputed individuals subject to immigration control. The Secretary of State for Justice agreed to act as the Justifying Authority (JA) for this application.

This decision document sets out the regulatory background, the proposed practice by the applicants, the process followed in considering this application and the determination of the JA, alongside the rationale for making this decision.

Justification of Practices Involving Ionising Radiation

Justification is one of the key principles of radiological protection, established by the International Commission on Radiological Protection, upon which the UK's radiological framework is based. The principle of justification is that no class or type of practice involving exposures to radiation should be adopted unless it produces sufficient economic, social or other benefit to the exposed individuals or to society in relation to the health detriment it may cause.

The Justification of Practices Involving Ionising Radiation Regulations 2004¹ (the Regulations) transpose into UK law the justification requirements of two European Directives which protect the health of individuals against ionising radiation: Council Directive 96/29/Euratom of 13th May 1996, laying down basic standards to protect the health of workers and the general public against the dangers arising from ionising radiation; Council Directive 97/43/Euratom of 30th June 1997, on health protection of individuals against the dangers of ionising radiation in relation to medical exposure, and repealing Directive 84/466/Euratom. Under these Directives, a particular class or type of practice needs to be justified, before use in individual cases can be considered.

For new classes or types of practice (i.e. those which are undertaken for the first time after the 1996 Directive came into force on 13th May 2000), justification is required before they are first adopted. An existing class or type of practice is defined in the Regulations as one in which a practice of that class or type was carried out in the UK before 13th May 2000. A class or type of practice is also defined as existing if there has been an express justification decision made under previous arrangements or it has been found to be justified either under previous arrangements or it has been found to be justified under the Regulations.

¹ The Justification of Practices Involving Ionising Radiation Regulations 2004, Statutory Instrument 2004 No. 1769

Proposed practice

The applicants proposed that age-disputed individuals will undergo scientific age assessment (SAA) which involve the use of both X-ray and Magnetic resonance imaging (MRI)². An age disputed individual is a person who requires leave to enter or remain in the UK and there is insufficient evidence to be sure of their age. SAA will be conducted alongside a social worker led Merton compliant age assessment to determine age. The applicants set out that their intentions were to use of X-rays for the following:

- Interpretation of x-ray images to assess the development of the mandibular third molars (lower wisdom teeth) using the Demirjian staging method
- Interpretation of x-ray images to assess the development of the bones of the hand and wrist

The applicants set out that assessing age is a complex task and there is no single age assessment method (scientific or not) which can determine an individual's age with precision; however, the use of scientific methods, which includes X-rays, offers the benefit for more informed and robust decision-making around an age-disputed person's age, and to align with international practice. These stated benefits are:

- protect children in care and in the wider community, particularly in schools, from individuals who claim to be younger than they really are and who seek to gain inappropriate access to the care and care leavers system.
- preventing children from being misidentified as adults.
- ensuring individuals get the appropriate care and support they need and are treated appropriately within the immigration system.
- improving the quality of age assessments by introducing a repeatable, scientific process which is consistent in its application.
- reducing additional financial costs to the applicant who pay Local Authorities for each Unaccompanied Asylum Seeking Child they are looking after.
- Alleviating stress for age-disputed individuals associated with current social worker assessments.

However, the applicants recognise that there are detriments and risks to the Government's proposed policy, particularly around the use of X-ray methods:

- radiation exposure.
- psychological harm.
- incorrect assessment.
- negative inference towards credibility.

Radiation exposure

The applicant has a statutory duty, by virtue of Section 55 of the Borders, Citizenship and Immigration Act (2009), to exercise its functions in a manner that takes into account the need to safeguard and promote the welfare of children in the UK.

The applicant has received independent scientific advice from the Age Estimation Science Advisory Committee (AESAC) on the suitability of different imaging methodologies for assessing age with respect to four different body areas (teeth, wrist, knee and clavicle). This advice has been published as part of their report and suggested that only X-rays of the teeth and wrist could be justified on account of both the low levels of radiation that would be incurred from exposure to radiation to these body parts, and the lack of substantive evidence that support the use of non-ionising imaging methodologies for these specific body areas.³

² This justification only considers the use of X-rays, given MRIs are not a ionising radiation practice.

³ Interim Age Estimation Science Advisory Committee (2022). Biological evaluation methods to assist in assessing the age of unaccompanied asylum-seeking children.

Pursuant to the AESAC's interim advice, and to ensure that any radiation exposure is as low as reasonably practicable (ALARP)-compliant, the applicant are only proposing to take sectional orthopantomogram x-rays as the type of dental x-ray that would incur the least radiation exposure to the age-disputed person. Only one X-ray per body part scanned will be necessary, and the applicant does not expect to repeat this procedure again on a given individual in their lifetime for the purposes of an age assessment, unless the initial image(s) are unclear as a result of an accidental movement by the age-disputed person. Independent advice from the Age Estimation Scientific Advisory Committee (AESAC) suggests this is minimal when compared to the benefits of a more informed age assessment.

The radiation exposures associated with both a dental and wrist X-rays are ALARP-compliant, as per the standard radiation exposure from medicalised practices of X-raying these body areas, as any lower radiation levels would fail to produce an image of sufficient granularity to make an assessment of age.

Both the nature and the implications of any X-ray procedure would be fully communicated to that individual, and only conducted with their consent, or the consent of a suitable adult where that individual does not have the capacity to provide their own consent.

MRI of the knee can also be used as an alternative for radiography of the hand/ wrist as the range of ages assessed by the hand/wrist and the knee are similar. Where possible, the individual will be able to choose which method they would prefer, also noting that MRI may not be suitable for all individuals.

The practice of x-rays for age assessment purposes are used frequently by international countries. The European Asylum Support Office found the carpal x-ray (hand/wrist) is the method most used by EU+ states with 23 respondents. Secondly, the dental X-ray is also quite common among the respondents, with 19 positive responses.

In addition, the applicant is aware of a number of wider scientific methods that could be employed to assess age that do not involve the use of ionising radiation. These include further analysis of MRIs of the teeth and wrist (as opposed to using X-rays), analysis of DNA methylation, age estimation using facial analysis software. However, according to the Age Estimation Science Advisory Committee, further research must be undertaken to validate the use of such methods for assessing age before they may be implemented in the UK. Given the urgent need to safeguard genuine children and prevent abuse of the immigration system, there is a strong desire from the applicant's Ministers to implement scientific methods of age assessment as soon as practical. Longer term, the applicant will commit to researching other, non-ionising methods of age assessment with the aim of eliminating the use of ionising radiation in age assessments, if and when the effectiveness of such alternative methods are validated.

Psychological harm

The applicant has a statutory duty, by virtue of Section 55 of the Borders, Citizenship and Immigration Act (2009), to exercise its functions in a manner that takes into account the need to safeguard and promote the welfare of children in the UK.

It is the applicant's policy to only refer individuals for a substantive age assessment if there is doubt about their age – specifically where there that individual's physical appearance and demeanour does not 'very strongly suggest they are significantly over 18,' and there is doubt that that individual is the age they claim to be. This threshold is set purposefully high to ensure that individuals can be given the benefit of the doubt. As a result, only those whose ages are in genuine doubt would be referred for an X-ray assessment.

Individuals with reasonable grounds for refusing a scientific method will be exempted from undertaking one, with no damage to the credibility of their age claim. It will be for individual decision-makers to assess whether an individual has reasonable grounds for refusing on a case-by-case basis.

Incorrect Assessment

There is error associated with scientific methods of age assessment and the risks of an incorrect assessment cannot be entirely eliminated. There is no one method, biological or social worker-led, that can predict age with precision therefore, scientific age assessment should consider whether the age claimed by the unaccompanied child is possible rather than be used to answer the specific question of how old that person is or whether they are under or over 18 years of age. The applicant are not looking to assign a specific age or age range but rather understand whether the science has more support of the claimed age of the age disputed person or the assigned age the social worker has assessed following a Merton compliant age assessment.

Given the challenges with current Merton-compliant age assessments, the applicants believe however that their policy proposals to implement x-ray methods will reduce the risk of incorrect assessments by providing decision-makers with a greater breadth of evidence upon which to make a decision about age. The use of scientific methods with known margins of error also represents a significant advantage to current social-worker based assessments, which have no known margin of error, as appropriate weight can therefore be given to the results of a scientific age assessment method.

It is key that methods used for age assessment have a low chance of misclassification. The applicant recognises that used in isolation, any one biological method of age assessment has a level of uncertainty in assessing chronological age. However, a triage approach is proposed AESAC's report with the methods to be combined dependent on the sex and claimed age of the person being assessed. This involves taking images of up to three different areas of the body by x-ray and MRI method. It is key that methods used for age assessment have a known chance margin of error, that is to say classifying genuine children as adults or vice versa. Combining assessment of dental and skeletal development is important as it increases the accuracy of the approach, compared to assessment of these areas in isolation.

Finally, AESAC advocate a likelihood ratio approach, that is to say a calculation comparing the social worker assigned age to the age disputed person's claimed age, using the results of the scientific age assessment methods to show which is more likely to be correct. The committee acknowledge that there is uncertainty in the data used to predict the maturation points of the teeth and bones particularly as there is limited data on UASC population groups. However, the likelihood ratio method offers a logical and consistent summary of the evidence and permits greater confidence in the assessment of whether the claimed age is possible. The likelihood ratio is widely recognised as the appropriate way to summarise evidence in favour of two alternative hypotheses (Royal Society 2020)— in this case the hypothesis that the assigned age is correct versus the hypothesis that the claimed age is correct.

Negative inference towards credibility

The applicants set out that the individual must provide informed consent in order for scientific age assessment to continue. If informed consent has not been obtained, the individual will not undergo scientific age assessment and will instead proceed with a Merton-compliant age assessment. In order to obtain informed consent, the individual must comprehend the process and have capacity to consent; the nature and implications of the procedure will be communicated to the age-disputed person, in a manner that is appropriate for that individual, prior to the scientific method of age assessment being undertaken. This will include for example the use of interpreters to communicate information in a language that the individual understands. Informed consent will be requested at various stages of the process and can be withdrawn at any point.

The applicants do not believe that taking an adverse inference from an individual's refusal to undergo a scientific method of age assessment, without reasonable grounds, violates the ability for that individual to provide consent for the following reasons:

- without this feature, an age-disputed person who deliberately and falsely claims to be a child, could simply refuse to undergo a scientific method of age assessment without consequence. This would undermine the Home applicant's ability to prevent adults from claiming children's services and put genuine children at risk.
- a refusal to consent to a scientific method of age assessment would only be taken into account when assessing the credibility of an age-disputed person's age claim only – not on the credibility of the age-disputed person's wider asylum claim.
- there may be good reasons for refusing to undergo a scientific method of age assessment. Where an individual has good reason for refusing to undergo a scientific method of age assessment, that refusal will not be taken into account when making a decision on their claimed age.
- an age-disputed person's refusal to undergo a scientific method of age assessment, without good reason, will not automatically preclude the claimant from being considered a child. An assessment will still be made of their claim, as part of a comprehensive, holistic age assessment process. The decision maker will assess all relevant evidence holistically, including a refusal to undergo a scientific method of age assessment, and make a decision on age.
- an individual can still give valid consent to something such as an examination, if there is a proportionate consequence of refusing. There is precedent in other domestic legislation of negative consequences being applied where an individual refuses to submit to a physical medical examination. In addition, a negative inference is also usually taken from an individual's refusal to undergo a scientific method of age assessment in countries where scientific methods of age assessment are carried out.

The applicants note that the methods in question would need to be specified in regulations made under section 52 of the Nationality and Borders Act 2022. The applicant have laid secondary legislation on 14 September to specify scientific methods which will need to be approved by Parliament, before a negative credibility inference could be made in relation to a refusal to consent to them.

Process for considering the application

The application was sent to the Justification Application Centre (JAC) in the Department for Energy Security & Net Zero (DESNZ). The JAC handles Justification Applications identifying which Government department is best placed to consider applications. The Secretary of State for Justice was identified as the Justifying Authority (JA) for this application. Before making a justification decision, the JA is required by the Regulations to consult certain statutory consultees. A Justification Liaison Group (JLG) was formed for the purposes of giving effect to this consultation, its purpose was to collate the relevant information for the JA. The JLG consisted of the following statutory consultees:

- UK Health Security Agency
- Health & Safety Executive (UK)
- Health & Safety Executive (NI)
- Office for Nuclear Regulation
- Food Standards Agency
- Environment Agency
- Scottish Environment Protection Agency
- Natural Resources Wales
- Department of Environment Northern Ireland

Under the Regulations the JA may also consult other persons whom he considers it appropriate to consult. On this application no further information was sought. The Scottish Government did however provide feedback as an interested party.

The application sought a determination as to whether the practice, as set out in the application, could be justified as a new class or type of practice, and therefore the task for the JLG was to gather the information and views to enable the JA to make a determination.

Determination and rationale

The JA has determined that the proposed practice was a new class or type of practice and that this can be justified, subject to the following conditions:

- Biological age assessment involving ionising radiation is limited to radiography of the third molar and/or of the hand/wrist only. The use of computed tomography for the purposes of assessing age is not permitted.
- The results of radiography of the third molar and/or of the hand/wrist must only be used to assess whether there is more support of the claimed age of the age disputed person, or the assigned age social workers have assessed them to be following a Merton compliant age assessment. A likelihood ratio approach must be used to compare the weight of evidence.

In reaching this determination the JA has taken into account the views of the JLG and the conclusions of its deliberations on this application.

The Health & Safety Executive (NI), Office for Nuclear Regulation, Environmental Agency, Scottish Environmental Protection Agency, Natural Resources Wales and Department of the Environment for Northern Ireland have confirmed that this application falls outside of their regulatory interests.

The UK Health Security Agency, Health & Safety Executive (UK) and Food Standards Agency noted the following:

- The decision to use X-ray imaging appears well considered and appropriate to minimise any individual's radiation exposure.
- All exposures to ionising radiation will fall under the remit of the Ionising Radiation Medical Exposure Regulations (IR(ME)R17), which places many responsibilities on those carrying out exposures. There should be careful consideration to ensure the contracted parties carrying out the exposures conform to these regulations.
- The predicted doses for both dental and wrist X-rays are appropriate estimates.
- There is poor representation from the dental community on the Age Estimation Scientific Age Committee (AESAC), considering that dental X-rays are one of the proposed practices.
- The practice under consideration is not intended to expose food to ionising radiation. It is possible, although unlikely, that food may be inadvertently carried by the persons being X-ray imaged. In the unlikely event that food was inadvertently exposed, the energy of the X-ray equipment used and the doses to which food may be exposed are likely to be below the levels specified in Regulation 2(a) of the Food Irradiation (England) Regulations 2009 and as such would be exempt from these Regulations. It follows that food inadvertently exposed will not become harmful to health.

The applicants have committed to ensuring all exposures are appropriate under related legislation. The applicants are also committed to exploring the viability of non-ionising scientific methods of age assessment, with the ultimate aim of eliminating the use of ionising radiation in age assessments, if and when the effectiveness of such alternative methods is validated. The JA notes this commitment and encourages the applicant to cease using X-rays when alternative methods are validated.

Scope of the decision

For determinations under Regulation 9, functions performed by Justifying Authorities in Scotland, Northern Ireland or Wales are exercised only in respect of their own countries whilst those performed by the Secretary of State may be applied to the whole of the UK. However, Devolved Administrations must be consulted in advance of any such determination. The JA has consulted with Devolved Administrations regarding this application. The decision has effect in the UK.

Public availability of the outcome

The Secretary of State has informed the applicant and published this determination on the DESNZ website. This determination is also published in the London, Edinburgh and Belfast Gazettes as it affects all of the UK.

The Lord Chancellor and Secretary of State for Justice wishes to thank the consultees for their detailed and wide-ranging contributions.